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<110> Rice University  
Stewart, Charles R.  
Shamoo, A. Yousif  
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<130> 61683-00004USPT  
<150> 60/357780  
<151> 2002-02-19  
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<170> PatentIn version 3.2  
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Gly Arg Leu Tyr Leu Asp Gly Pro Gly Val Ile Val Thr Leu Asp Gln  
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Pro Phe Ile Leu Leu Lys Glu Val Val Glu Glu Glu Asp Glu Asp  
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Asp Arg Ile Asp Ala Glu Phe His Asn Asp Pro Leu Leu Arg Lys Leu  
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Glu Asn Thr Thr Glu Lys Leu Thr Pro Glu Glu Thr Gln Leu Ala Gln  
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Trp Thr Thr Met Thr Arg Val Phe Ser His Asp Leu Lys Lys Gly Ile  
115 120 125

Pro Tyr Ala Ile Lys His Lys Asn Ser Gly Asn Ile Leu Tyr Gly Leu  
130 135 140

Tyr Ser Gly Leu Leu Asn Pro Val Thr Ala Leu Phe Arg His Leu Asn  
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35 40 45

Ile Glu Gly Ser Glu Ile His Leu Arg Thr Pro Asn Gly Asn Glu Pro  
50 55 60

Ser Tyr Arg Tyr Met Gly Gln Tyr Leu Ile Leu Lys Pro Tyr Gly Ser  
65 70 75 80

Ser Asp Pro Arg Gly Asp Ile Leu Val His Glu Asp Val Gln Tyr Val  
85 90 95

Arg Val Asp Ala Gln Ala Met Pro Gly Asp Leu Ile Glu Ala Leu Glu  
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Pro Asn Lys Leu Pro Phe Ser Gly Lys Arg Phe Lys Tyr Arg Pro Ala  
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145 150 155 160

Arg Met Gly Val Leu Pro Pro Lys Thr His Ile Tyr Thr Thr His Lys  
165 170 175

His Val Phe Met Glu Asp Val Phe Val Leu Gly Asn Ser Tyr Glu Leu  
180 185 190

Ser Ser Pro Asn Asp Val Glu Met Thr Pro Ile His Ala Val Phe Thr  
195 200 205

Gly Phe Ser Lys Asn Arg Asp Glu Ala Ile Phe Val Asn Pro Tyr Tyr  
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Gln Ile Thr Asn Trp Lys Gly Thr Glu Thr Arg Tyr Asn Leu His Val  
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Thr Glu Tyr Lys Val Leu Val Pro Tyr Asp Thr His Lys Glu Glu Asn  
65 70 75 80

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130 135 140  
  
Gly Pro Tyr His Val Leu Val Pro Arg Asp Thr Asp Thr His Thr Pro  
145 150 155 160  
  
Thr Arg Glu Glu Leu Ala Ala Val Ile Met Asn Lys Ala Phe Thr Arg  
165 170 175  
  
Thr Glu Thr Gln Asp Ser Gln Glu Asp Thr Gly Thr His Lys Gly Leu  
180 185 190  
  
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Lys Val Gln Ser Gly Tyr Tyr Thr Ala Thr Glu Asn Glu Glu Asp Val  
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Lys Ser Glu Ile Glu Ala Thr Lys Lys His Met Lys Ala Val Lys Glu  
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Ser Gly Lys Thr Val Asn Asp Tyr Arg Lys Glu Glu Asn Thr Lys Arg  
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Phe Asp Gln Gln His Ala Asn Phe Leu Ile Val Glu Thr Asp Arg Met  
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Val Glu Gly Met Ile Ala His Gly Asp Gly Arg Lys Val Ala Glu Leu  
50 55 60

Asp Thr Ser Thr Gln Tyr Tyr Trp His Leu Lys Leu Val Glu Tyr Thr  
65 70 75 80

Pro Ile Pro Gly Arg Thr Gln His Tyr Val Asp Leu Val Asp Gly Thr  
85 90 95

Asn Pro Asp Val Cys Tyr Phe Ser Leu Cys Asp Cys Ser Gly Asp Asn  
100 105 110

Ile Thr Asp Arg Arg Trp Ser Asn Met Val Lys Arg Leu Gln Asn Pro  
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Gly Met Pro Ser Trp Ile Glu Tyr Pro Gln  
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Tyr Tyr Tyr Phe Asn Thr Ala Ile Cys Ile Glu Asn Pro Val Thr Arg  
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Glu Phe Ala Ile Asp Asp Ser Tyr Gly Ser Leu Ser Thr Asn Gln Asn  
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Phe Gly Thr Glu Ile Met Gly Glu Val Val Lys Thr Ser Leu Gly Thr  
35 40 45

Leu Lys Ile Ala His Pro Glu Glu Asp Leu Phe Glu Val Ala Leu Ala  
50 55 60

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Val Leu Phe Tyr Ile Gln Asn Asn Leu Cys  
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20 25 30

Lys Lys Asp Val Glu Glu Gly Lys Tyr Asp Val Val Val Glu Glu Ala  
Page 6

35

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Ala Val Ser Leu Ala Asp Thr Glu Glu Val Val Glu Glu Val Val Thr  
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Glu Glu Glu Asp Ile Leu Glu Gly Val Glu Val Val Glu Asp Glu Glu  
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Glu Glu Glu Ala Ala Glu Asp Val Glu Glu Pro Thr Ser Glu Glu Asp  
85 90 95

Ser Glu Asp Glu Trp Glu Glu Gly Tyr Pro Val Ala Thr Glu Val Glu  
100 105 110

Glu Asp Glu Asp Glu Glu Ile Glu Tyr Pro Glu Val Gly Asp Phe Glu  
115 120 125

Asp Glu Lys Ala Ile Lys Lys Tyr Ile Lys Gly Leu Thr Asp Glu Gln  
130 135 140

Leu Gln Ala Trp Cys Glu Leu Glu Gly Ala Glu Trp Val Glu Asn Glu  
145 150 155 160

His Arg Asn Ile Asn Arg Met Arg Met Ala Met Ala Ile Lys Ala Val  
165 170 175

His Phe Pro Glu Leu Ala Lys Lys Pro Ser Ser Lys Lys Ser Lys  
180 185 190

Tyr Ala Glu Tyr Thr Thr Glu Glu Leu Val Glu Met Ala Ile Asp Asn  
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Page 7

Thr Val Thr Asp Ala Val Pro Phe Ile Leu Ala Gly Tyr Lys Asn Val  
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Ser Tyr Glu Met Asp Asp Ile Val Val Leu Cys Ser Glu Pro Ile Gly  
50 55 60

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Asp Leu Gly

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Leu Phe Cys Leu Gly Trp Val Ser Asp Ile Ser Pro Glu Ser Leu Gln  
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35 40 45

Thr Ile Phe Val Leu Glu Asn Pro Leu Tyr Pro Asp Val Asp Lys Ile  
50 55 60

Pro Glu Lys Val Leu Gly Ile Ala Val Asp Ala Leu Glu Asp Met Leu  
65 70 75 80

Asp Asn Val Pro Val Glu Asp Leu Pro Val Thr Glu Glu Gln Gly Asn  
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Thr Phe Lys Val Lys Pro Gly Val Phe Leu Leu Thr Asp Val Lys Ser  
35 40 45

Tyr Leu Ile Gly Asp Lys Tyr Asp Asp Ala Phe Asn Ala Leu Ile Asp  
50 55 60

Phe Val Leu Arg Asn Asp Arg Asp Ala Val Glu Gly Thr Glu Thr Asp  
65 70 75 80

Val Ser Ile Arg Leu Gly Leu Ser Pro Ser Asp Met Val Val Lys Arg  
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Gln Asp Lys Thr Phe Thr Phe Thr His Gly Asp Leu Glu Phe Glu Val  
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His Trp Ile Asn Leu  
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Phe Tyr Lys His Leu Ser Thr Glu Gln Leu Glu Glu Trp Val Glu Leu  
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Glu Gly Leu Glu Val Lys Asp Thr Asp Ser Asp Ser Ile Tyr Arg Met  
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Arg Leu Cys Met Ala Ile Leu Tyr Leu Asn Phe Pro Lys Lys Thr Ala  
65 70 75 80

Gly Lys Lys Lys Ala Ser Pro Tyr Lys His Ile Ser Leu Glu Glu Leu  
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Val Gln Met Ala Thr Asp Asn Asp Ile Glu Val Lys His Thr Asp Ser  
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Val Val Asn Tyr Ser Leu Glu Tyr Gly Asn Tyr Gln Trp Ile Phe Gln  
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Lys Tyr Met Lys Glu Gly Lys Val Thr Val Glu Arg Phe Tyr Arg Asn  
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Ser Leu Asp Ile Pro Lys Glu Ile Leu Thr Asp Glu Ala Leu Ala Phe  
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Ile Lys Asp Trp Asp Glu Asn Ala Asn Glu Tyr Glu Leu His Ala Gly  
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 20 25 30

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 35 40 45

Ala Glu Thr Ile Ala Asn His Ile Ile Leu Asp Ile Asn Gly Thr Tyr  
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Arg Thr Phe Ser Val Asn Asp Ile Val His Cys Ser Leu Glu Lys Val  
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Ile Thr Leu Glu Gly Asp Val Thr Asn Glu Phe Ile Asp Arg Leu Gln  
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Ile Leu Val Asn Lys Glu Val Gln Gly Ser Gln Ser Thr Gln Gln Ser  
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Leu Ser Ser Val Phe Glu Ser Thr Leu Glu Lys Tyr Asn Ser Pro Asp  
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Asp Phe Ala Asp Tyr Leu Glu Glu Thr Glu Glu Val Asp Tyr Glu  
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Asp Tyr Ser Leu Asp Asp Thr Ile Asp Ala Ile Ser Tyr Ala Leu Lys  
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Thr Gln Glu Pro Val Gln Ala Glu Trp Cys Leu Leu Met Val Asp Val  
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35 40 45

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50 55 60

Tyr Leu Arg Asp Leu Leu Gln Phe Trp Leu Ser Arg Leu Phe Leu Gly  
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Tyr Leu Glu Glu Leu Glu Leu Val  
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